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THE WHITE SAPOTE AND THE MATASANO

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THE ANTIDESMAS AS PROMISING FRUIT TREES FOR FLORIDA

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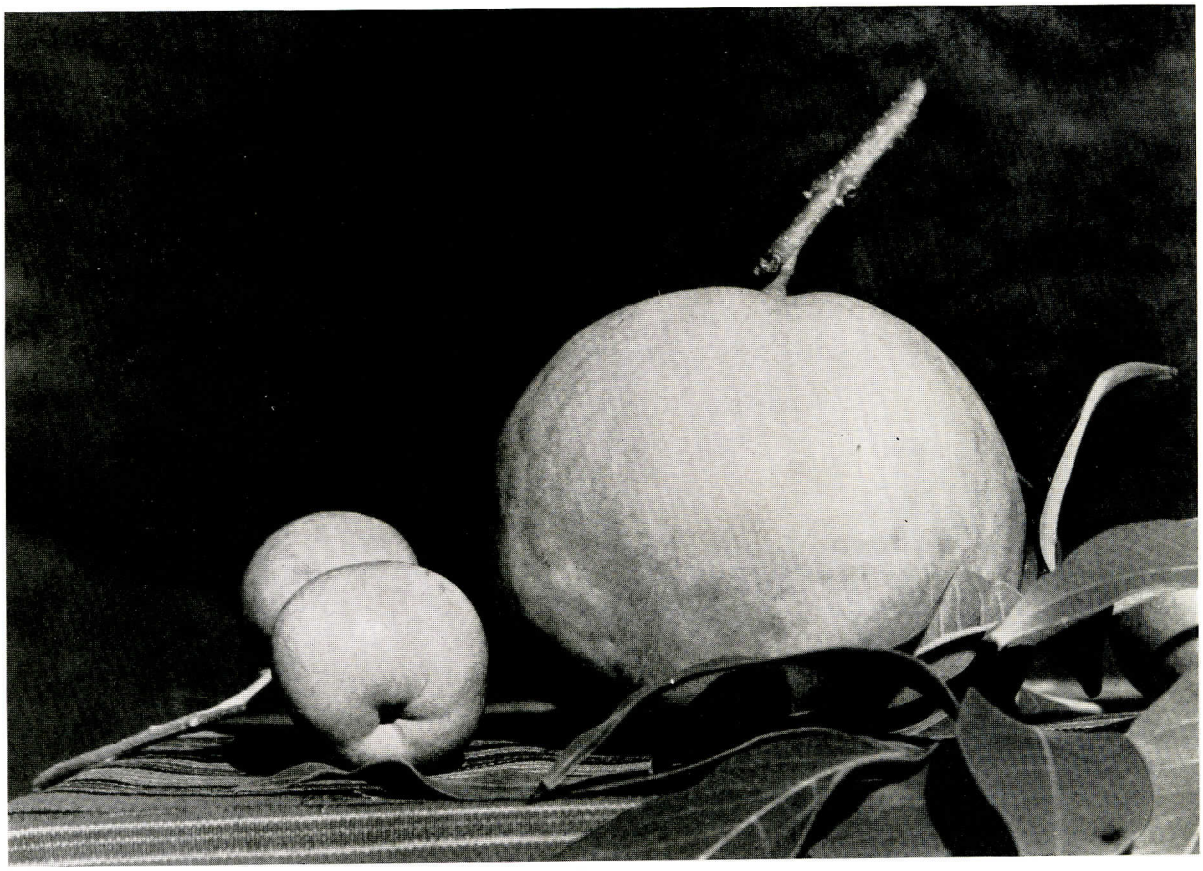
I HAVE BEEN INTERESTED in these closely related fruit trees since 1898 when in Santa Barbara, California, Dr. Franchesci took me to see what he said was the very first tropical fruit tree to be introduced into California. It was a large tree of the white sapote (*Casimiroa edulis*) that stood on de la Guerra street and was believed to have been planted by one of the early Mexican settlers in 1810 and was 80 years old at the time. It lived to be over 100 years old, I believe.

We had trees of both the white sapote and the matasano (*Casimiroa tetrameria*) in the Brickell Avenue garden in Miami, and although it seemed strange to most of my friends I liked the taste of both of them and like them still. The texture is smooth and delicate, fairly melting in one's mouth, and the flavor is unique and delicious. I must admit that in the after taste there is something disagreeable, a curious bitter, medicinal flavor. Nobody seemed to have a good word to say for their fruits. Even so devoted a fruit fancier as W. J. Krome asked me once why such fruits interested me when there was such



THE WHITE SAPOTE AND THE MATASANO

Two delicious fruits which can be grown successfully in Florida. Left, the Sarah Jones variety of the white sapote (Casimiroa edulis), a small flat, delicate flavored sort with white flesh but with too large seeds. Right, a Kampong seedling of the matasano (Casimiroa tetrameria) which weighed a pound, had small seeds, a golden yellow flesh and no bitter flavor. Photograph taken in May. Foliage is of the matasano.

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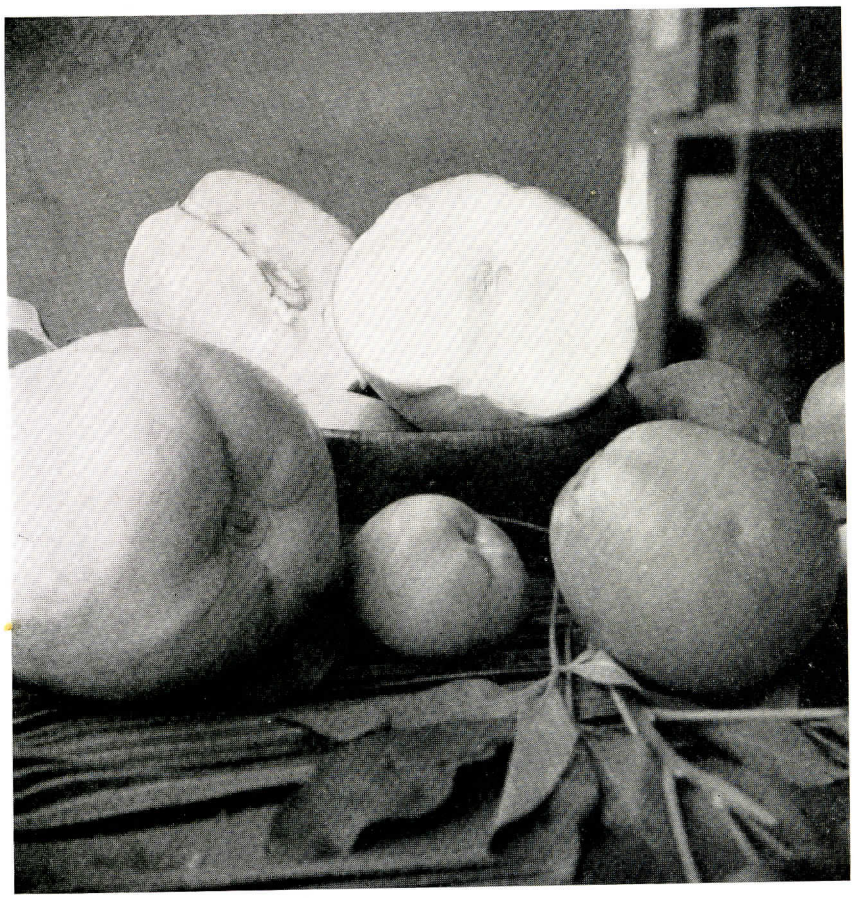
big game as the avocado and mango about, both then in their beginnings.

But why should we suppose that this flavor is necessarily attached to the fruit, any more than that the horrible acid rank flavor of a wild apple is a character which selection and cross breeding cannot change. I once spent an afternoon among a lot of seedling wild apple trees on the hillsides of Western New York and I hunted in vain for a single tree with fruits on it that were fit to eat. Burbank once showed me the apple tree back of his house upon which he had grafted scions from over a thousand seedlings, almost all of which proved worthless when they fruited. The white sapote and the matasano are still at the commencement of their careers. Selections from their seedlings have only recently been made.

When Mrs. Fairchild and I acquired "The Kampong" in 1916, one of the first fruit trees I planted was a white sapote. When it bore we were much disappointed for, although it had a heavy crop of fruits, they were all of the strong flavored kind and we let them rot on the ground. I ate an occasional one for perhaps my "taste buds" are not so sensitive to bitterness as some of my friends' appear to be.

One afternoon when I was visiting the garden of Mrs. Sarah Jones which contained one of the very earliest collections of interesting plants in Coconut Grove, Mrs. Jones showed me her white sapote tree and I found the fruits were entirely different from mine. They were flat, tomato shaped, whereas mine were elongated, resembling in shape a bull-nosed pepper fruit. The flesh of hers was white while mine was golden yellow but, more important than any of the other differences, her fruit had a perfectly delicious flavor with not the slightest suggestion of any medicament or bitter whereas in mine this was so pronounced that I seldom succeeded in getting anyone to take a second bite of one. I took some grafting wood from her tree which she declared she was going to cut down to make room for something else, and worked it on my seedling.

When the grafts came into bearing I found the fruits from them as delicate as I had remembered them to be, even though the seeds were very large, making them difficult to eat. But it was not a good cropper. It would flower in November or December and sometimes drop all of its flowers and then flower again later with scattering blooms and bear only a few fruits. This dry year of 1939 it has fruited abundantly and I am disposed to ascribe its large crop to the continuous dry weather.



Ripe fruits of Matasano and White Sapote just picked from trees on "The Kampong" May 1935. Fruit on left and fruit cut open is the Matasano. Small flat fruit in center is the Sarah Jones White Sapote. Fruit on right is the Johnston's "Golden Sapote."

I looked around for other good varieties and was told that Mr. H. W. Johnston had one which he called the "Johnston's Golden Sapote." I went to see it and grafted a scion of it on my own tree for although with a similar yellow flesh it had a flavor almost devoid of bitter and was intensely sweet. It had proven attractive to a great many of Mr. Johnston's visitors and indeed some of them failed to detect any bitter at all in its flavor, although others found it more or less bitter. Its fruits were large and attractive looking and my grafts have been quite regular bearers. Its flavor is totally distinct from that of the white fleshed Sarah Jones variety in which no one has detected a trace of bitterness.

Not having enough room on my original tree for more grafts, I planted out another stock tree and worked five seedling sorts on it which I got from various places but they behaved rather badly—growing out into long ungainly branches which for several years refused to bear. Last year two of them bore and the fruits were white fleshed and of fair quality. The seeds of the fruits were still too large, however.

Every spring for several years I searched the gardens about Coconut Grove for better varieties than my own and found on one place, that of Mrs. Captain Thompson, 2497 Abaco Ave., a fine tree which was loaded down with perfectly round fruits having white flesh and a delicious flavor devoid of bitterness. Mrs. Thompson had planted some of the seedlings in tin cans and she gave me a few of them, together with some seeds which I planted out in my little nursery. By this time some of my own seedlings of the Sarah Jones variety which I had given away began to bear. Dr. L. H. Baekeland, for example, had one which bore a good crop of round, fine flavored fruits and I took seeds from it and planted them beside those from Mrs. Thompson's tree in my nursery.

There was an amazing difference in the behaviour of these seedlings. Some scarcely grew at all or grew very slowly but others shot up with great vigor and these I singled out for transplanting into my grove. One of these, No. 595, proves to be a desirable variety so far as the character of its fruits are concerned. They are round and with white flesh and delicious flavor but the seeds are still too large. It forms however too scraggly a tree. Its fruits ripened the first week in May and by May 8th half the crop had been eaten by admiring friends.

I have mentioned that there was a tree of the matasano (*Casimiroa tetrameria*) a relative of the white sapote, in the Brickell Avenue Garden and that it had attracted my attention as early as 1912. In 1917 after the great freeze, when the temperature in the garden went to 26.5° F. I recorded the fact that it had not been injured.

Whereas the leaves of the white sapote are smooth, those of this matasano are like velvet, being covered with soft pubescence on their undersides.

Just how I came into possession of my own matasano tree, my records do not show but I think it was a seedling of a tree I found in the Chapman Field Garden for in 1926 a hurricane swept the Brickell Avenue Garden and I lost track of the original introduction. It was S.P.I. 21030 from Tegucigalpa, Honduras, sent in in 1907 as seed by Reinhold Fritzgartner who did not know what kind of a tree it was but who described it as a big tree; fruit the size of an orange or larger; flesh white or yellow, sweet or slightly sour, containing two or three large black seeds. Fritzgartner tripped up on the color of the seeds for they are brown in all the species of the genus.

After the hurricane as many of the plants as possible were transferred to the Chapman Field Garden and seedlings of this tree were among them, I believe, and my tree is a seedling of one of these.

I watched my matasano tree with special interest. I was obliged to prop it up to prevent it sprawling out all over the place, and was rewarded in 1934 by having a single fruit set which grew to be a giant in comparison with any of my white sapote fruits, for when it dropped, following a rain, it weighed slightly over a pound. To my surprise, it had only three quite small seeds in it and was composed of a golden yellow fruit flesh of the consistency of a custard. Its flavor was particularly delicious without a trace of bitterness. I was enchanted by my new fruit.

The following December when the tree was in bloom again we had another freeze and the temperature on the Kampong went down to 30° F. but it did not in the least injure the flowers and this year it set four quite enormous fruits

The Matasano tree on "The Kampong" in full fruit. Its large fruits are so heavy that the branches are often broken by their weight. They are sometimes irregular in shape, due to the stings of a species of bug. When they ripen on the tree they fall and sometimes smash to pieces on the ground because of their thin skins. They must be picked before ripening.

which ripened the 19th of May, 1935, two days previous to the ripening time of the single fruit in 1934, regardless of the fact that 1934 was a very wet season and 1935 very dry. These fruits ranged in weight from 702 grams to 929 grams (a pound is 453 grams) and all had small seeds in them varying in weight around 25 grams which would make the ratio of fruit flesh to seed 1:34 or thereabouts which is a higher ratio of flesh than that possessed by any mango I ever tested. There were two or three aborted fragments of seeds in the fruits indicating perhaps a lack of pollination. The abnormal weather might have interfered perhaps with the supply of pollen on the white sapote trees nearby.

There is evidence that the matasano flowers were pollinated by the white sapote flowers, at least in one instance, for from the seed of the first matasano fruit that ripened in 1934 a seedling originated and is now in my orchard which has perfectly smooth leaves like those of the white sapote. Dr. Standley of the Field Museum to whom I sent fruits of both the matasano and the white sapote has expressed the opinion from his observations in Central America and Mexico that we may have here interbreeding forms which do not deserve to be ranked as distinct species. More work should be done with them in the field.

From these experiences it seems apparent that we have in South Florida some very promising materials for the horticulturists to work with. In the first place through the planting of large numbers of seeds, new and better varieties may be discovered. Out of my small experiment has come at least one promising seedling which bears perfectly round fruits of medium size which have the delicious flavor of the Sarah Jones variety. So delicious have my friends in Boston and Coconut Grove found them that had I possessed a dozen trees of it I think I could have sold all the fruits in Boston for enough to pay for the care of the trees. But its fruits have too large seeds and the habit of the tree is still too scraggly for orchard purposes.

This matter of pruning of the white sapote has puzzled me and so far as I have seen there are no really shapely trees of it as there are of the mango or the avocado. Perhaps they require a new technique that I have not mastered. The matasano seems more amenable to pruning than does the white sapote.

During these years my original seedling white sapote had kept bearing every year, never missing a season but because its fruits were not relished by my family they rotted on the ground. One day there appeared a man from the market of Miami whose name I cannot recall and seeing the fruit on the ground he begged some to make marmalade. Later he brought the result for me to taste and I found it very satisfactory. The slight bitter flavor reminded us of the bitter of Cross and Blackwell's orange marmalade made of bitter oranges. It was a distinctive marmalade and our friends all praised it. For two seasons he made marmalade of our white sapotes and sold it and was most enthusiastic about it. Then he dropped out of sight. Later Mr. and Mrs. Letchworth who have built up a reputation for new marmalades took the crop from our trees and have been selling white sapote marmalade on the Curb Market.

So far I have not found out what the bitter principle is in the white sapote. It deserves to be investigated for who knows but that it might have some relation to the vitamines which the fruit doubtless contains? How much importance should be attached to the high sugar content of the fruit I am at a loss to decide. Whether the fact that the white sapote is unusually rich in sugars, having, according to Jaffa, nearly 20 per cent, of which 12 per cent is cane sugar, will make any one like it better than the strawberry which has only half as much, is a question. After eating white sapotes I find strawberries require a good deal of sugar.

I am not sufficiently informed about the situation in California, regarding these fruits, to speak intelligently. I once was shown at Orange, California some very strange looking white sapote fruits, one of which was completely seedless and Mr. Taft who showed them to me told me that a fruit had been produced on the same tree which had a hole through its middle—was a monstrosity in fact. The old tree at Santa Barbara unfortunately was a worthless seedling and never produced good fruits. Some very promising kinds have appeared recently I understand and two at least of these have been fruited in Florida. I have the "Nancy Maltby" on the Kampong and its first fruit was excellent, having a somewhat

A White Sapote tree on "The Kampong" from which half the crop has been picked. The small round fruits have white flesh, several large seeds, thin skins and a delicious flavor entirely devoid of bitterness. The photograph taken May 8th shows the characteristic scraggly growth of the species.

thicker skin than my varieties. Glenn Bates at Fort Lauderdale who has taken a special interest in them has fruited the "Pike" and I have tasted that, ripening it from a hard green specimen which could have been shipped across the continent, I presume.

The character of the skin will prove to be important if the white sapote attempts to enter a wide commercial field. It must be able to stand shipment without bruising, for if it softens in transit it arrives as a messy appearing thing which would be unsalable. Once it does begin to soften it can be kept however in the refrigerator for a considerable time. The problems of shipping will doubtless be worked out in their case as they have in other fruits and should not deter us from going ahead with the improvement and understanding of them.

To sum up the case of these two fruits; we have here a genus of plants (Casimiroa) which is distantly related to the orange and which is reported to have five species in it, only two of which we have tested in Florida. These two species are comparatively hardy and are probably capable of growing and fruiting throughout most of the state and in parts of California. They appear to bear fairly well, sometimes abundantly, and they ripen their fruits in May when the variety of fruits on the market is small. If picked before they soften and wrapped in cellophane and excelsior they can be shipped to Boston. The white sapote has seeds that are too large but this defect can probably be altered, for there are seedless sorts showing that it varies in this respect. The matasano is not subject to this criticism. Many of the seedlings have bitter fruits but even these lend themselves to marmalade making. The others which have no bitterness can be easily eaten out of hand and used as a table fruit. The large matasano can be easily eaten with a spoon, its gorgeous golden fruit flesh being as soft and delicate as any custard. It makes a surprisingly delicate mousse when beaten up cold and I never tasted anything better than the matasano ice cream which Earnest, our cook, prepares and serves on our table. It is a gorgeous golden dish which so far has met with the enthusiastic approval of all our guests.

The question of propagation is extremely simple for they both can be budded or side grafted as easily as can the orange.

Yet with all of these characters in its favor there appears to be nowhere an orchard of either species. Perhaps the reason is that the "perfect variety" is still to be found and as yet little plant breeding in this genus has been done. What we may expect when the other wild species that are said to occur in Mexico are brought in and all of the species are subjected to the modern science of plant breeding, nobody can predict. I maintain that enough has already been accomplished to make it worth while for amateurs who live in regions where they can grow them to plant both species in their yards and study them. I am sure they will be rewarded as I have been.

There is one matter with relation to the matasano which I would not bring up were I not confident that some traveller in Mexico will raise it. There appears to be a shadow hanging over the matasano because of its name which means, freely translated, kill health. For some time the idea that it might be unwholesome haunted me but now that many of my friends have eaten the fruit many times without any ill effects I feel confident there is some mistake here as there is in so many traditions regarding the palatability of fruits. Dr. Standley comes to my assistance with the theory that the name is a corruption of an Indian name which sounded like the Spanish words mata sano.

I recognize the very fragmentary character of this paper and were I not leaving for a long expedition which will distract my attention from my pets, I would refrain from publishing these observations in this incomplete form.

THE ANTIDESMAS AS PROMISING FRUIT TREES FOR FLORIDA

BY
DAVID FAIRCHILD

I DO NOT KNOW of any better way to become acquainted with a new tree than to grow it where you can see it every day. You cannot learn so very much about it through reading and while you may get a faint idea of it by seeing its photograph, still, the texture of its leaves, the odor of its flowers, the taste of its fruit—which, after all are very important characters—cannot be conveyed to you except in a very general way by the printed word or by the halftone.

Even the botanist who has a herbarium specimen of it in his collection, which he can pore over with his hand lens and compare with other specimens of related species and learn a host of details which can only be learned in that way, does not actually know it in the same sense that the good observer does who grows it in his yard and cares for it as a pet.

I realize that it is much easier to read about a tree than to plant a seed and watch it grow into a tree and fight to protect its life from fungus diseases and insect pests and even, perhaps, against the indifference of one's gardener.

It is regarding a tree in my yard and some of its relatives that this brief paper is written. A short account of it without any illustrations appeared in the Annual Report of the Florida State Horticultural Society but I fear fell on deaf ears for I have heard nothing from it. I trust this story may meet a kinder fate.

The first time I ever saw a plant of the genus Antidesma, to which the subject of my story belongs, was in the "arboretum" which Mr. Charles Deering started and later for various reasons abandoned to the real estate developers.

Mr. Deering had received many new plants from our Office of Plant Introduction in Washington and every time I came to Florida I went to see how they were coming along. As I was walking over the place I saw, half hidden by other plants, a small bunch of brilliant red berries that reminded me faintly of a bunch of currants. Although sour, they were interesting and I remember thinking that they would perhaps be exciting to a northern botanist who has so few really new fruits to get excited over. The shrub was marked *Antidesma nitidum,* Tulasne. and it had grown from seed sent in from the Philippines. In his description of it, Dr. C. F. Baker who sent it in and who was a brother of Ray Stannard Baker, the author, and himself a great entomologist, had this to say about it: "One of the finest local shrubs, of good shape and covered with great numbers of pendant clusters of small berries which are long, bright red, finally black, and which are edible. This would make an important addition to ornamental shrubs for warm countries."

Here was Baker's recommended shrub and it was fruiting. Edward Simmonds and I thought enough of it to take its portrait and record its behaviour and I have its portrait before me now. But astonishing as it may seem to some of my readers who imagine that introducing and establishing new plants is easier than it is, this is practically all I have today to remind me that *Antidesma nitidum* ever flourished in America. This was in 1916, three years after Baker had sent the seeds from Los Banos and we had given them the S. P. I. number 34695.

A few notes on its behaviour remain; one made just after the great freeze of 1917 when the temperature in Mr. Deering's arboretum went to 26° F. or lower, states that the group of small trees that had been in fruit had been killed back to the ground. I mourned its disappearance from the garden. However, it had not been killed out, for in 1922, on another visit I saw it again and recorded that "the bushes of *Antidesma nitidum* were literally loaded with dark red, almost black berries and I could have picked half a gallon of these fruits, I feel sure. They taste a little like blueberries but are a trifle resinous. They color the hands like blueberries and would make

Tree of Antidesma bunius, on "The Kampong," that bears several bushels of fruit every August. It began bearing when six years old and might be compared with a giant currant bush for the clusters of fruit hang down in a similar way and make a delicious jelly that is comparable in color and quality to currant jelly. It has several names in Java and the Philippines but its scientific name has become established here. Nathan Sands, who takes care of it, posing.

stunning pies. This is a bush that we should put in people's yards."

Whatever became of those bushy little trees I have never known. The advent of the Florida boom swept the "Deering Buena Vista Estate" into oblivion and, so far as I know, the plant has disappeared from South Florida; unless some seedlings have survived somewhere. Perhaps some reader of these lines can say.

But this was not the only antidesma on the Deering place and in 1917 I noted that some plants of *Antidesma bunius,* (L.) Spreng., one of its cousins, had been frozen to the ground. This species had been also sent in from the Philippines the same year that Baker had sent the other species. Since it came from an official of the Bureau of Agriculture in Manila without any advertisement of any kind, one of my colleagues in the Office in Washington hunted up the literature about it and published under our Introduction number 43544 a resumé of the account of it given by the noted forester of British India, Sir Dietrich Brandis, in his "Indian Trees," and what John Lindley had to say about it in his "Treasury of Botany." This included a statement that the leaves are used as a remedy for snake bites, the bark for rope making, and that the wood when immersed in water becomes black and as heavy as iron, etc. It was also stated that the very juicy red fruits turn black when ripe and are about one-third of an inch in diameter, sub acid in taste and used in Java for preserving, chiefly by Europeans, and that they formerly sold for two pence a quart; furthermore, that it was called the "Bignai."

It was not any of these published accounts however, that led me to follow up my acquaintance with this species. It was a remark made by Charles H. Steffani, one of my former associates in the Brickell Avenue garden, now the County Agent of Dade County. I enquired of him one day what had become of the *Antidesma nitidum* that had made such a promising beginning on Mr. Deering's place and he replied, "I don't know, but it was not so good as the other species anyway; *Antidesma bunius.* That's a wonderful tree. I have seen it loaded down with a bushel of fruit and it makes a fine jelly." Whether it was he who secured me a plant I do not recall. I have it in my notes that in 1928 the plant I had set out north of my study was nine feet tall.

From that date the struggle began. The beautiful, large, leathery, glossy leaves with which its branches were covered and which gave the tree a very elegant appearance, began to show signs of a scale insect. The undersides of the leaves became coated with the translucent bodies of the insect from the backs of which tiny drops of honeydew fell on the leaves below them and in this a form of Sooty Mould fungus grew, forming dense, soot-black felts that were most unsightly.

These disfigured the foliage so that the young tree which I passed in going to my study, became a disagreeable sight. "Volck" had fortunately been discovered so my man Sands and I brought it into play. For a time though it was a matter of doubt if it would be effective. Every few days I went over the leaves to see if there were any live scales left with their caches of young ones under their tortoise-shell-like bodies and, if I found any the "Volck" had to be applied again. At last we were successful, and slowly the beautiful foliage of the tree began to so charm me that I did not care whether the tree fruited or not.

To my surprise Sands announced one autumn that during my absence in August it had borne a big crop of black fruits which the birds had taken because nobody was there to pick and cook them. Since many of the fruits must have fallen on the ground I looked for seedlings but there were none. The next season Sands planted a lot of the seeds in a flat but none of them grew and my suspicions were aroused and I dipped into the literature; to discover that the *Antidesma bunius* is a dioecious species, bearing only female flowers on one tree and males on another. My tree was evidently a female, but there was no other tree of the species anywhere about. How could it bear the full crops that it had begun now to produce without any pollination? Again we tried to raise seedlings, again without success. Thinking that there might be somewhere in the Homestead region other trees of this species I enquired of Dr. H. S. Wolfe and he informed me that there was a male tree near the Subtropical Experiment Station and took me to see it when it was in full bloom. Cutting a few male flower clusters I brought them home and tied them carefully to female clusters on my tree which I think ensured pollination, but again there was no germination of the seeds that formed in the fruits borne by the clusters which had been

Unlike most fruit trees, the Antidesma produces male flowers on one tree and female flowers on another. The date palm of the desert and the carob tree of Italian hillsides does the same. In this enlarged photograph the curious male flowers without petals or sepals can be seen on the flower spike on the right; each with its three stamens; each stamen with two pollen masses at its tip. The spike on the left has only female flowers, each with a stigma seated on what will become a berry when it matures. It will be well to have both male and female trees on one's place although my tree bore with no male anywhere near it.

pollinated. I came to the conclusion that there was something wrong perhaps in our seed-flat technique. I have since raised a few seedlings, but only very few, from the many seeds we have planted.

In the meantime I called the fruit of my antidesma to the attention of Mrs. Helen E. Letchworth who had specialized in the making of jellies and who was selling her product on the Miami Curb Market. She came with her car the following August and together with her husband stripped the tree of its load of fruit and made of them a very beautiful, dark red jelly which she was able to sell to her customers at a good price. For the past four years she has taken the fruits and made jelly from them and we have had on our shelves jars of her antidesma jelly and tried it on our many guests, getting from them universally favorable responses. I have come to look upon this jelly as the equal of currant jelly, even though there is involved here a matter of my childhood memories, for currant jelly brings up the picture of my mother and the house where I was born in Michigan and all sorts of delightful memories. But I can imagine that as the years pass and antidesma jelly comes to be made in South Florida as commonly as is currant jelly in Michigan, there may come upon the stage a generation to whom childhood memories of it add to its interest and make it preferred by them to currant jelly.

There is another factor in the case of this antidesma. Whereas the currant bushes growing in every garden in New England are known by some varietal name such as the "Cherry," the "Currant," the "Fay," the "Wilder" etc., and represent in each case a selected seedling from which canes have been taken for propagation, my antidesma tree, which by the merest chance, so to say, has come to stand in the "Kampong," may be an inferior seedling when compared with other seedlings. Who can tell what the best seedling of which the species is capable would be like? Whether the berries may not be twice as large and juicier and of better flavor than mine? Indeed I have just heard of a superior strain of this species in the Philippines.

Pretending I am young again and prepared to tackle the creation of a superlatively fine new fruit of the antidesma species, I have imagined myself introducing the best fruiters to be found among the over ninety species of the genus Antidesma which the botanical collectors have discovered scattered through the jungles and prairies of the Old World tropics. As I pored over the volumes of botanical descriptions, there opened before me a most interesting vista of possibilities. It appears that the primitive people of the tropical world have paid a good deal of attention to the antidesma trees of their localities. My own tree thus became the starting point for a journey of many thousands of miles on the other side of the globe.

Before, however, opening up the book vista concerning the antidesmas, there is a question which I would like to raise. What would be an appropriate common name for this new class of fruits? We have quite gaily called this *Antidesma bunius,* which happens to be the first species of which the fruit has been made into jelly in South Florida, by its generic name of "antidesma." Perhaps some have imagined that this use of the scientific name for its common name gets us away from the tangle of common names. But what shall we call the next species of antidesma (*A. nitidum* for example) to fruit and be used for jelly? It must have a common name. If we call the first introduction "antidesma" will the situation not be much as if when the first citrus fruit was introduced it took the name "citrus" as its own common name. Let us imagine that this first introduction was what we now call the lime. We could not very well have called the lemon, when it was introduced, citrus too; and the orange and the pomelo and the kumquat, for they are just as much citrus species to the botanists as is the lime.

I fear we shall have to recognize the chaotic character of common names and accept for the antidesma some native East Indian name which was given to it, perhaps centuries ago, in some native village by some unknown plantsman. According to this principle, *Antidesma bunius* might take the Philippine name of "Bignai" and any superior seedlings of it that are worthy of special names be called the Smith Bignai or the Jones Bignai which would bring them into line with the King Apple and the Bartlett Pear. Perhaps some one will suggest we use the complete scientific name and call our fruit jelly *Antidesma bunius* jelly and varieties of it the Smith *Antidesma bunius* jelly, etc. The popular demand

for brevity will, I fear, never permit of the use of such clumsy names, although I have to admit that the man on the street does memorize "sulphanilamide" and the chemists have no trouble with "hexamethylenediamine."

To return to the literature. *Antidesma bunius* is known and given special names by the Battacks and Lampongs of Sumatra, by the Buginese and natives of Celebes, and the people of Timor, that far away island in the Timor Sea, north of Australia. It is referred to as the "Bignai" or "Bignay" in the Philippines; in Java it is called "Booni" by the Malays, "Wooni" by the Javanese and "Boorneh" by the Madurese, while the Sundanese of West Java even distinguish by separate names the male and the female trees.

It is a much cultivated tree, according to J. J. Ochse who figures it in color in his beautiful book "Fruits and Fruit Culture in the Dutch East Indies," which was published in Java in 1931. The fruits when fresh are very much relished by the natives, he says, and are used by them for syrups and jams and also for putting into brandy. In that part of the world the *Antidesma bunius* bears its fruits at divers seasons but is most prolific in September and October.

The scientific name Antidesma was given the tree to denote its use by the natives as a cure for snake bites, against which, according to the Dutch botanist J. Burmann, who wrote the Flora of Ceylon in 1737, it was used in those early days.

According to K. Heyne, the Director of the museum in Buitenzorg, Java, where thousands of tree products of the Malay Archipelago are exhibited, the bark of our *Antidesma bunius* contains an alkaloid and it has been used medicinally, as have also the leaves. This does not indicate that the leaves are poisonous; on the contrary they are edible, as is evidenced by the statement in Mr. J. J. Ochse's other book, "The Vegetables of the Dutch East Indies," that "the young leaves are eaten raw or steamed as a *lablab*." This Malay word stands for a class of side dishes much used by the vegetarian inhabitants of Java, consisting of leaves, fruits, sometimes also flowers or tubers, usually eaten raw with rice but sometimes steamed, singed or cooked.

Since my tree is just this moment coming into new leaf I have now as I write, my mouth full of antidesma leaves. They are pleasantly acid, very tender and altogether palatable. Who can say what vitamins they may contain? In these days when the ideas of the chemists regarding the synthetic enzymes which build up the protein molecules of our bodies are in their infancy, who can predict where and in what plants new and valuable enzymes will be found? My antidesma tree has acquired a new interest since I learned that its leaves are a choice vegetable in Java.

It appears that this *Antidesma bunius* was brought into the Moluccas before the time of Rumphius, for he included it in his "Herbarium Ambionense," written before the days of Linnaeus. It is therefore a very old cultivated tree indeed. It occurs wild, according to Burkhill, from the foot of the Himalayas through Ceylon and eastward as far as northern Australia. And for the reason that it can struggle against the vicious "lalang" grass (*Imperata cylindrica*) which is slowly destroying millions of acres of virgin forest in the oriental tropics every year, this tree is considered valuable even aside from its edible fruits. It may find a place in the forestry program in Florida.

But what does the literature say of the other species of this genus antidesma of which there are ninety? According to Burkill's recently published "Dictionary of the Economic Products of the Malay Peninsula"* *Antidesma alatum* is a small tree occurring from Siam southward and having scarlet fruits. *A cuspidatum* is common in the Malay peninsula and has fruits of which the birds are fond. *A. ghaesembilla* is a shrub or small tree the acid leaves of which are edible as well as the fruits. *A. montanum* is a small tree occurring from China to Borneo and Java and throughout the Malay Peninsula and has fruits that the children eat. *A. stipulare* is a shrub found in the Moluccas and on the west coast of the Malay Peninsula with edible fruits that are used as a medicine for children. *A. tomentosum* is found in all the mountainous parts of the Malay Peninsula and in Java and its fruits are sometimes eaten. *A. velutinosum* is a 45-foot tree found from Burma through the western parts of Malaysia

* Burkill, I. H. A dictionary of the Economic Products of the Malay Peninsula. 2 vols. Publ. by the Crown Agents for the Colonies, 4 Millbank, London 1935. A most valuable book of reference.

One of the most delicious and beautiful of the jellies for sale on the Miami market is made from the almost black fruits of this Antidesma bunius. When in fruit the tree is completely covered with these black clusters, making it a spectacular sight.

and is very common in the Malay Peninsula and the fruits are reported as edible.

Ferdinand Pax, in his article on the Order Euphorbiaceae—the order to which the antidesma belongs—published in Engler and Prantl's "Pflanzen Familien," an encyclopedic work on the plants of the world, mentions West Africa, Sumatra, Japan, Madagascar, the Liu Kiu Islands and the Fiji Islands as localities where species of this genus are to be found. Curiously enough he says nothing about whether the fruits are edible or not; doubtless many of them are. The fact that this character is not mentioned in a botanical description does not mean that the matter was overlooked by the author of the description. It generally indicates that the collector of the specimens which found their way into the herbarium or the museum where the books were written, found the fruits difficult to preserve or he collected the plant when it was not in fruit or was little interested in the matter of the edible character of its fruits anyway and reported nothing with regard to this feature.

According to Guilfoil in his "Australian Plants Suitable for Gardens, Parks, Timber Preserves, etc." Melbourne; a large fruited species *A. dallachyanum* is known in Australia as the Herbert River Cherry, Queensland Cherry or Je-jo. This appears to be one of the largest fruited species in the genus and the juice is said to be found very grateful to persons suffering from fever. The "Niggers-cord" is another species found in north Australia. It is referred to *A. ghaesembilla* and is said to have edible fruits and be used for medicine.

Enough has probably been said to show that an unexplored field for any willing plant breeder has been opened. One of the objects of this paper is to illustrate the fact which long residence in South Florida has taught me, that the plants I have about me are tied by close relationships to others that might be even more interesting, had we only seeds of them to grow and the time to watch them come into fruit. It goes without saying that a search for these relatives of my *Antidesma bunius* tree would take one into some of the fascinatingly interesting places of the world.

And now, just as I am copying for publication this account of the tree in my yard in Coconut Grove and preparing at the same time for a Fairchild Garden Expedition to the islands of the Moluccas, there comes a letter from Mrs. Harold Loomis who is stopping in "The Kampong" during our absence in which she says: "The antidesmas are all gathered. When only the big tree had been picked, the Letchworths compressed 52 gallons of pure juice from the fruit. Isn't that amazing?"

I could hardly find a more enthusiastic note with which to close this fragmentary account of the antidesmas.

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